

**Notice of Allowability**

Application No.

10/566,999

Applicant(s)

UDAGAWA ET AL.

Examiner

RuiMeng Hu

Art Unit

2618

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed on 01/29/2008.
2. ☒ The allowed claim(s) is/are 15.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some\* c) ☐ None of the:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☒ SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☒ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.  
(a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached  
1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.  
(b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☒ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |  |   |
|--|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 5. <input type="checkbox"/> Notice of Informal Patent Application                     |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 6. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br>Paper No./Mail Date _____    | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment                   |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance  |
|  | 9. <input type="checkbox"/> Other _____   |

## DETAILED ACTION

### EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Brad Spencer on 2/27/2008.

The abstract of the application has been amended as follows:

Abstract:

**[The object of the present invention is to automatically adjust the synchronization of an amplitude signal and a phase signal in a transmitting apparatus such as polar modulation transmitting apparatus.]**

A transmitting apparatus includes a polar signal producing circuit **[(101)]** which produces signals corresponding to the amplitude and the phase of a transmitting modulated wave from an input signal and multiplies the amplitude signal by the phase signal by a multiplying circuit **[(107)]** to amplitude modulate a phase-modulated wave to produce a transmitting modulated wave and radiates this transmitting modulated wave as radio wave from an antenna **[(108)]**. An amplitude/phase detecting circuit **[(109)]** detects an amplitude signal and a phase signal from the input of the multiplying circuit **[(107)]** and the input of a phase-modulated signal producing circuit **[(106)]**. A delay difference computing circuit **[(110)]** computes a correlation function between the

amplitude signal produced by the polar signal producing circuit and the amplitude signal detected by the amplitude/phase detecting circuit and a correlation function between the phase signal produced by the polar signal producing means and the phase signal detected by the amplitude/phase detecting means, and computes a delay difference between the amplitude signal and the phase signal from maximum values of the respective correlation functions. Then, a timing adjusting circuit **[(102)]** adjusts the delay time between the amplitude signal and the phase signal on the base of the computed delay difference.

***Allowable Subject Matter***

2. **Claim 15** is allowed.

3. The following is an examiner's statement of reasons for allowance:

Consider **claim 15** the best prior art of record found during the examination of the present application, **Persson (US Patent 7072420)** in view of **McCune et al. (US Patent 6366177)** fails to specifically disclose, teach, or suggest the amplitude/phase detector has a selector selecting either the amplitude signal or the phase signal and an analog-digital converter converting the selected amplitude signal or phase signal provided at an input section of the amplitude signal and the phase signal.

Persson discloses a transmitting apparatus using polar modulation (column 2 lines 1-3), the apparatus comprising: a polar signal producer (figure 1, RF circuit 1, column 3 lines 15-21), producing signals corresponding to an amplitude and a phase of a transmitting modulated signal from an input signal (figure 1,  $r_4$  and  $\phi_4$ ).

Persson discloses (column 3 lines 15-21) the operation of the RF circuitry is well known in the art, in the same field of endeavor, McCune et al. clearly disclose the details of polar modulation. An amplitude signal producer (McCune et al. figure 11, magnitude controller 1127 controlling power amplifier for amplitude modulation), producing an amplitude signal from a signal corresponding to the amplitude; a phase-modulated signal producer (McCune et al. figure 11, phase modulation signal generator 1129), producing a phase-modulated signal from a signal corresponding to the phase; an amplitude-modulation amplifier (McCune et al. figure 11, power amplifier 1107), amplitude-modulating the phase-modulated signal (polar modulation) by the amplitude signal and the phase-modulated signal to produce a transmitting modulated signal (McCune et al. figure 11, polar modulated signal output from power amplifier 1107).

Persson further discloses an amplitude/phase detector (figure 1, column 3 lines 48-53, 59-64, delay controllers 9 operate to minimize the magnitude of the difference between  $r_4$  and  $r_3$ , and the difference between  $\phi_4$  and  $\phi_3$ ; thus delay controllers 9 have magnitude detection function and indirectly detecting the magnitude of  $r_1$  and  $\phi_1$ ), detecting an amplitude signal ( $r_1$ ) and a phase signal ( $\phi_1$ ) from an input signal to the amplitude-modulation amplifier (figure 1, polar signal producer circuit 1) and an input signal to the phase-modulated signal producer (figure 1, polar signal producer circuit 1); a delay difference computer (figure 1, delay calculator 12), computing a delay difference between an amplitude signal and a phase signal based on the signal corresponding to the amplitude and the signal corresponding to the phase ( $r_4$  and  $\phi_4$ ), which are produced by the polar signal producer (figure 1, polar signal producer

1), and the amplitude signal and the phase signal (figure 1,  $r_1$  and  $\phi_1$ ), which are detected by the amplitude/phase detector (delay controllers 9); and a timing adjustor (figure 1, adjusters 14 and 16), adjusting timings of the amplitude signal and the phase signal based on the delay difference computed by the delay difference computer.

Persson as modified by McCune et al. discloses wherein the amplitude/phase detector (figure 1, delay controllers 9 capable of processing I and Q digital signals) is constructed of a digital circuit; delay controllers 9 operate to minimize the magnitude of the difference between  $r_4$  and  $r_3$ , and the difference between  $\phi_4$  and  $\phi_3$ . These teachings clearly differ from the claimed invention; therefore, claim 15 of the present application is considered novel and non-obvious over the prior art and, consequently, is allowed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

Any response to this Office Action should be **faxed to (571) 273-8300 or mailed**

**to:** Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**Hand-delivered responses** should be brought to

Customer Service Window

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Randolph Building  
401 Dulany Street  
Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RuiMeng Hu whose telephone number is 571-270-1105. The examiner can normally be reached on Monday - Thursday, 8:00 a.m. - 5:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on 571-272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RuiMeng Hu  
R.H./rh  
February 27, 2008

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